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A CUMULATIVE CUBIC-FOOT TALLY FORM FOR POINT SAMPLING

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Data obtained in point sampling (prism cruising)[1] are usually compiled in the office with a desk calculator or by automatic data processing methods. Many times the cruiser would like to know what he is looking at in terms of total gross volume, volume by species, or by size classes. The cumulative tally form presented here enables the cruiser of interior Alaska stands to do this.

The cubic foot:basal area ratios in this tally form were derived from volume tables for interior Alaska tree species.[2] Cubic-foot volume, inside bark, is from a 1-foot stump to a minimum merchantable d.o.b. top of 4.0 inches.

Individual cubic foot:basal area ratios were computed by species for each d.b.h. height class. Average ratios by height class were then calculated for poletimber-size trees (softwoods 5.0 to 8.9 inches d.b.h. and hardwoods 5.0 to 10.9 inches d.b.h.) up to the 70-foot class, and for sawtimber (softwoods 9.0 inches d.b.h. and larger and hardwoods 11.0 inches d.b.h. and larger) to the limits of the original volume tables

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[1] Bruce, Donald. Prism cruising in the western United States. Mason, Bruce and Girard, Consulting Foresters, Portland, Oregon. 61 pp., 1961.

[2] Haack, Paul M., Jr. Volume tables for trees of interior Alaska. U.S. Forest Serv. Res. Note NOR-5, 11 pp. 1963.

Performance of the tally sheet was checked by comparing volume estimates of 34 plots obtained using the cumulative tally with volumes obtained from the original volume tables. Tally form volume estimates were .0052 percent lower than the volume tables with individual plots varying from +.022 to -.072 percent.

To estimate gross volume at a point sample location, record each "in" tree by marking through the appropriate volume shown on the cumulative tally form. Volume values are by species and d.b.h. group. If more than one tree is tallied for a given class, mark off the next larger number. Enter the last volume marked in the space provided. Diagonal slashes are provided for keeping the poletimber-sawtimber tallies separate. Determine the total volume tallied for each species (keep these totals separate if per-acre volumes by species are desired) or combine if only one per-acre volume is wanted. To determine gross volume per acre, multiply the total volume tallied by the basal area factor (BAF) used in prism cruising, and divide by the number of points sampled.

To determine square feet of basal area per acre, multiply the number of trees tallied by the basal area factor and divide by the number of points sampled.

CUMULATIVE TALLY FOR INTERIOR ALASKA TREE SPECIES

(Cu.ft./b.a. ratios)

Project ______________________ Date __________________ Plot No. __________

Cruiser ______________________ Location ______________________________

Total height	SPRUCE d.b.h. range		Last marked volume	BALSAM POPLAR d.b.h. range		Last marked volume	BIRCH-ASPEN d.b.h. range		Last marked volume	Total height
	5-8 inch	9 inch +		5-10 inch	11 inch +		5-10 inch	11 inch +		
30	9 18 26 35	10 21 31 41		6 13 19 26			8 16 24 32			30
35	11 22 33 44	12 25 37 50		9 18 26 35	11 21 32 42		11 21 32 43	11 22 33 44		35
40	13 26 39 51 64 77	15 29 44 59 73 88		10 21 31 42 52 62	12 25 37 49 61 74		13 26 39 51 64 77	15 30 45 60 75 90		40
45	15 30 44 59 74 89	17 34 50 67 84 101		12 24 36 48 60 72	14 28 42 56 70 85		15 30 45 60 75 89	17 34 51 68 84 101		45
50	17 33 50 67 83 100	19 38 56 75 94 112		14 28 41 55 69 83	16 32 47 63 79 95		17 34 51 68 84 101	19 38 58 77 96 115		50
55	19 38 57 76 95 113	21 41 62 83 104 124		15 31 47 62 78 93	18 35 53 70 88 105		19 38 57 76 95 114	21 43 64 86 107 128		55
60	21 41 62 83 104 124	23 45 68 91 114 136		17 34 51 68 85 102	19 39 58 77 97 116		21 42 63 84 105 126	24 47 71 94 118 141		60
65	23 45 68 91 113 136	25 49 74 99 123 148		19 38 56 75 94 113	21 42 63 84 105 126		23 46 69 92 115 138	26 51 77 102 128 153		65
70	24 49 74 98 123 147	27 53 80 107 133 160		21 42 63 84 104 125	23 46 68 91 114 137		26 51 77 102 128 153	28 55 83 111 139 166		70
75	29 57 86 114 143 172 200 229 257 286			24 48 73 97 121 145 169 193 218 242			29 58 87 116 145 174 203 232 261 290			75
80	31 61 92 123 153 184 215 245 276 307			26 52 78 104 130 156 182 208 234 260			31 63 94 125 157 188 219 251 282 314			80
85	33 65 98 131 163 196 229 261 294 327			28 55 83 111 138 166 194 221 249 277			∑ Birch-aspen			85
90	35 69 104 139 174 208 243 278 312 347			29 59 88 118 147 177 206 236 265 295						90
95	37 73 110 147 184 220 257 294 330 367			31 62 93 125 156 187 218 249 280 312			∑∑ = ______			95
100	39 77 116 155 194 232 271 310 348 387			33 66 99 131 164 197 230 263 296 329						100
105	41 81 122 163 204 244 285 326 366 407			35 69 104 138 173 207 242 276 311 345			BAF = ______			105
110	43 85 128 171 214 256 299 342 385 427			36 72 109 145 181 217 253 290 326 362						110
115	45 89 134 179 223 268 312 357 402 446			38 76 114 151 189 227 265 303 341 379			No. points = ______			115
120	47 93 140 187 233 280 327 374 420 467			40 79 119 159 198 238 277 317 357 396						120
	∑ Spruce			∑ Balsam Poplar						

$$\text{B.A./acre} = \frac{\text{No.trees}}{\text{No.points}} \times \text{BAF}$$

B.A./acre = _____

$$\text{Cu.ft. vol./acre} = \frac{\sum\sum \times \text{BAF}}{\text{No. points}}$$

Cu.ft. vol./acre = ________

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TALLY SHEET USE

To obtain gross cubic-foot volume, inside bark, from a 1-foot stump to a minimum merchantable d.o.b. top of 4.0 inches

1. Mark the appropriate volume shown on the cumulative tally by species and total height-d.b.h. class.
   - a. If more than one tree per given class, mark off the next larger number for the same class.
2. Enter the last marked volume in the space provided.
   - a. Diagonal slashes are for tallying poletimber and sawtimber separately.
3. Sum the box entries, keeping separate by poletimber, sawtimber, and species, if desired.
4. Using the sum total or the breakdowns desired:
   - a. Multiply the volume value by the BAF (prism cruising) used.
   - b. Divide by the number of points sampled.

To obtain basal area

1. Count the number of trees tallied on the form.
2. Multiply by the BAF used.
3. Divide by the number of points sampled.